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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/825,609 | 04/16/2004 | Hidekazu Mizuno | Q81033 | 8052 |

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| EXAMINER | |
|---|---|
| MARTIN, LAURA E | |
| **ART UNIT** | **PAPER NUMBER** |
| 2853 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 01/31/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/825,609 | MIZUNO, HIDEKAZU | |
| | Examiner | Art Unit | |
| | Laura E. Martin | 2853 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10 and 11* is/are allowed.

6)☒ Claim(s) *1-9 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Allowable Subject Matter*

Claims 10 and 11 are allowed.

The following is an examiner's statement of reasons for allowance: prior art does not teach or suggest a method or computer-readable storage medium having a program able to perform the function of dividing a printing area into several areas and measuring the amount of ink and elapsed time for each divided printing area, every time the printing head ejects ink to each divided area, an amount of ink ejected to the divided area is calculated, and a new accumulated value is obtained by adding the calculated amount of ink to a value obtained by multiplying a predetermined coefficient to an accumulated value previously obtained, and the waiting time is set based on a final accumulated value that is obtained at an end of printing on the front side of said medium.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5, 6, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (EP 1096421) in view of Takekoshi et al. (US 20030234847).

**Nakajima et al. discloses:**

As per claims 1 and 12, Nakajima et al. teaches a printing apparatus, printing method, and printing system comprising: a printing head (figure 4, element 401) for ejecting ink to a medium to carry out printing thereon; and a side-reversing member (figure 12, element 450) for reversing the sides of said medium that is printed by said printing head, wherein a waiting time for drying [0023] before reversing said medium with said side-reversing member, the ink ejected to said medium is set according to an amount of ink ejected [0107] by said printing head, and an elapsed time from when the ink was ejected by the printing head [0023]. Nakajima et al. also teaches a computer readable storage medium having a program executed by a printing apparatus [0024] and a computer [0016]. (The limitations, "wherein a waiting time for drying before reversing said medium with said side-reversing member, the ink ejected to said medium is set according to: an a mount of ink ejected by said printing head, an elapsed time from when the ink was ejected by the printing head, wherein a printing area is divided into several areas and said amount of ink and said elapsed time are measured for each divided printing area, every time the printing head ejects ink to each divided area, an amount of ink ejected to the divided area is calculated, and a new accumulated value is obtained by adding the calculated amount of ink to a value obtained by multiplying a

predetermined coefficient to an accumulated value previously obtained, and the waiting time is set based on a final accumulated value that is obtained at an end of printing on the front side of said medium" lacks an apparatus to perform such steps. There is no limit to the claimed structure based on said claim language.)

As per claim 2, Nakajima et al. teaches a carrying member for carrying said medium (figure 12, element 407) wherein said printing head performs a printing action during intervals between carrying actions of said carrying member [0059].

As per claim 3, Nakajima et al. teaches a waiting time set according to an amount of ink ejected by said printing head during an interval between the carrying actions of said carrying member (figure 8, [0101]) and an elapsed time from said printing action performed by said printing head during said interval between said carrying actions [0023].

As per claim 5, Nakajima et al. teaches said waiting time differs according to a type of ink ejected by said printing head (figure 11, [0108]).

As per claim 6, Nakajima et al. teaches the waiting time differs accordin to a type of medium that is printed on said printing head (figure 10, [0108]).

**Nakajima et al. does not disclose:**

A printing area divided into several areas and said amount of ink and said elapsed time are measured for each divided area.

**Takekoshi et al. discloses:**

A printing area divided into several areas and said amount of ink and said elapsed time are measured for each divided area [0154].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the printing apparatus, method, and printing system taught by Nakajima et al. with the disclosure of Takekoshi et al. in order to improve surface regularity of the print medium.

Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (EP 1096421) and Takekoshi et al. (US 20030234847), and further in view of Kimura et al. (US 6270199).

**Nakajima et al. discloses:**

Nakajima et al. teaches a printing apparatus, printing method, and printing system comprising: a printing head (figure 4, element 401) for ejecting ink to a medium to carry out printing thereon; and a side-reversing member (figure 12, element 450) for reversing the sides of said medium that is printed by said printing head, wherein a waiting time for drying [0023] before reversing said medium with said side-reversing member, the ink ejected to said medium is set according to an amount of ink ejected [0107] by said printing head, and an elapsed time from when the ink was ejected by the printing head [0023]; a carrying member for carrying said medium (figure 12, element 407) wherein said printing head performs a printing action during intervals between carrying actions of said carrying member [0059]; and a waiting time set according to an amount of ink ejected by said printing head during an interval between the carrying actions of said carrying member (figure 8, [0101]) and an elapsed time from said printing action performed by said printing head during said interval between said

carrying actions [0023]. (The limitations, "wherein a waiting time for drying before reversing said medium with said side-reversing member, the ink ejected to said medium is set according to: an a mount of ink ejected by said printing head, an elapsed time from when the ink was ejected by the printing head, an amount of ink ejected by said printing head is calculated based on: a number of times said ink is ejected by said printing head, and an amount of said ink ejected by said printing head per one ejection action, wherein a printing area is divided into several areas and said amount of ink and said elapsed time are measured for each divided printing area, every time the printing head ejects ink to each divided area, an amount of ink ejected to the divided area is calculated, and a new accumulated value is obtained by adding the calculated amount of ink to a value obtained by multiplying a predetermined coefficient to an accumulated value previously obtained, and the waiting time is set based on a final accumulated value that is obtained at an end of printing on the front side of said medium" lacks an apparatus to perform such steps. There is no limit to the claimed structure based on said claim language.)

**Takekoshi et al. discloses:**

A printing area divided into several areas and said amount of ink and said elapsed time are measured for each divided area [0154].

**Nakajima et al. and Takekoshi et al. do not disclose**:

Nakajima et al. does not disclose the amount of ink ejected by said printing head is calculated based on a number of times said ink is ejected by printing head, and an amount of said ink ejected by said printing head per one ejection action.

**Kimura et al. discloses:**

Kimura et al. teaches an amount of ink ejected by said printing head is calculated based on a number of times said ink is ejected by printing head, and an amount of said ink ejected by said printing head per one ejection action (column 16, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the printing apparatus of Nakajima et al. as modified with the disclosure of Kimura et al. in order to provide a higher quality control system.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (EP 1096421) and Takekoshi et al. (US 20030234847), and further in view of Otsuka et al. (US 6416151).

**Nakajima et al. discloses:**

Nakajima et al teaches the printing apparatus of claim 1.

**Nakajima et al. and Takekoshi et al. do not disclose:**

Nakajima et al. and Takekoshi eta l. do not disclose waiting time differing according to surrounding temperatures or according to surrounding humidity.

**Otsuka et al. discloses:**

Otsuka et al. teaches waiting time differing according to surrounding temperatures or according to surrounding humidity (column 36, lines 42-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Nakajima et al. as modified with the disclosure of

Otsuka et al. because the surrounding environment can factor into the amount of time needed for ink to dry.

***Claim Rejections - 35 USC § 112***

Claims 1- 9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: a controller or element for performing the following steps:

Claims 1 and 12: a waiting time for drying before reversing said medium with said side-reversing member, the ink ejected to said medium is set according to: an a mount of ink ejected by said printing head, an elapsed time from when the ink was ejected by the printing head, an amount of ink ejected by said printing head is calculated based on: a number of times said ink is ejected by said printing head, and an amount of said ink ejected by said printing head per one ejection action, wherein a printing area is divided into several areas and said amount of ink and said elapsed time are measured for each divided printing area, every time the printing head ejects ink to each divided area, an amount of ink ejected to the divided area is calculated, and a new accumulated value is obtained by adding the calculated amount of ink to a value obtained by multiplying a predetermined coefficient to an accumulated value previously obtained, and the waiting time is set based on a final accumulated value that is obtained at an end of printing on the front side of said medium.

Claim 9: a waiting time for drying before reversing said medium with said side-reversing member, the ink ejected to said medium is set according to: an a mount of ink ejected by said printing head, an elapsed time from when the ink was ejected by the printing head, an amount of ink ejected by said printing head is calculated based on: a number of times said ink is ejected by said printing head, and an amount of said ink ejected by said printing head per one ejection action, wherein a printing area is divided into several areas and said amount of ink and said elapsed time are measured for each divided printing area, every time the printing head ejects ink to each divided area, an amount of ink ejected to the divided area is calculated, and a new accumulated value is obtained by adding the calculated amount of ink to a value obtained by multiplying a predetermined coefficient to an accumulated value previously obtained, and the waiting time is set based on a final accumulated value that is obtained at an end of printing on the front side of said medium.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Laura E. Martin

1/26/07

MANISH S. SHAH
PRIMARY EXAMINER